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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: McCormack, et al.	)	Examiner: Matthew D. Matzek
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Title: MICROPOROUS STRETCH THINNED/FILM NONWOVEN LAMINATES AND LIMITED USE OR DISPOSABLE PRODUCT APPLICATIONS

APPELLANT'S ORIGINAL APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Appellant hereby submits its original appeal brief to the Examiner's July 14, 2008, Advisory Action in accordance with 37 CFR § 41.37 for the subject application.

1. REAL PARTY IN INTEREST:

The real party in interest is Kimberly-Clark Worldwide, Inc., the assignee of the Applicants' entire right title and interest.

2. RELATED APPEALS AND INTERFERENCES:

None.

3. STATUS OF CLAIMS:

Claims 1 – 30 are pending, but claims 28, 29 and 30 have been withdrawn from examination. Appellant appeals the rejections of claims 1-27, which are under final rejection mailed on April 25, 2008. Claim 1 is the only independent claim on appeal.

4. STATUS OF AMENDMENTS:

The last amendment to be entered in this application was filed on September 11, 2007. No further amendments to the claims have been submitted.

5. SUMMARY OF CLAIMED SUBJECT MATTER:

As explained at page 6, lines 26 – 29 of Appellant's specification, independent claim 1 is directed to a breathable laminate having a moisture vapor transmission rate of at least about 300 $g/m^2/24$ hours. As shown schematically in FIG. 1 and explained at page 8, lines 17 – 20 of Appellant's specification, the laminate 10 of claim 1 comprises a nonwoven support layer 14 bonded to a film layer 12. As explained at page 8, lines 21 – 23 of Appellant's specification, the film layer 12 can be oriented. As explained at page

8, lines 21 – 23 and shown schematically in FIG. 1, the oriented film 12 comprises a letdown resin phase 15 and a carrier resin phase 13, which contains filler particles 17 surrounded by pores 19. As explained at page 7, lines 10 - 15 of Appellant's specification, the letdown resin 15 comprises a first ethylene copolymer having a density between 0.900 and 0.915 g/cc and a melt index of no greater than 6 g/ 10 minutes. As described at page 5, lines 15 – 25 of Appellant's specification, the carrier resin phase 13 comprises a different ethylene polymer or copolymer than the letdown resin phase 15. As explained at page 7, lines 17 - 20 of Appellant's specification, the different ethylene polymer or copolymer of the carrier resin phase 13 has a density at least about 0.003 g/cc greater than the density of the letdown resin phase15. As shown schematically in FIG. 1, substantially all of the filler 17 in the oriented film 12 is contained only within discrete regions of the carrier resin phase 13. As shown schematically in FIG. 1, substantially all of the filler 17 in the oriented film 12 is thereby separated from contact with the letdown phase 15. As shown schematically in FIG. 1, each of the discrete regions of the carrier resin phase 13 is completely intermixed with and surrounded by the letdown resin phase 15.

6. <u>GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL</u>:

The rejection of claims 1-5 and 7-27 under 35 U.S.C. 103(a) over <u>Heyn et al</u> (U.S. Patent 6,106,956) in view of <u>Haffner et al</u> (U.S. Patent 6,045,900) and <u>Norquist et al</u> (U.S. 6,447,875).

The rejection of claim 6 under 35 U.S.C. 103(a) over Heyn et al in view of Haffner et al and Norquist et al as applied to claim 1, and further in view of Bansal (U.S. 2003/017054 A1).

7. ARGUMENT:

A. Claims 1 – 27 are patentable under 35 U.S.C. 103(a) over Heyn et al in view of Haffner et al and Norquist et al.

Claim 1 calls for a breathable laminate formed from a nonwoven support layer bonded to an oriented film. The oriented film of each of claims 1-27 requires "a letdown resin phase" and a "carrier resin phase", with the "carrier resin phase" comprising "a filler." As depicted for example in the cross-sectional illustration of Appellant's FIG. 1 and set forth in claim 1, substantially all of the filler particles 17 in the oriented film 12 are contained within discrete regions of the carrier resin phase 13. Thus, the filler particles 17 are thereby separated from contact with the letdown phase 15. Moreover, each of these discrete regions of the carrier resin phase 13 is completely intermixed with and surrounded by the letdown resin phase 15.

Appellant's oriented film 12 (FIG. 1) is structured so that each of the discrete regions of the carrier resin phase 13 is completely intermixed with and surrounded by the letdown resin phase 15. However, the Heyn et al film is produced using a segmented extrusion die wherein the carrier resin is only brought together with the letdown resin as the two constituents are co-extruded side-by-side. Because of this planar, side-by-side interface resulting from this segmented extrusion die, Heyn et al cannot duplicate the structure of Appellant's film (FIG. 1) wherein the discrete regions of

the carrier resin phase 13 is completely intermixed with and surrounded by the letdown resin phase 15.

As acknowledged in the last sentence of paragraph 2a at page 3 of the April 2008 Final Office Action, the combination of Heyn et al and Haffner et al fails to address Appellant's claim 1 limitation of having the discrete regions of carrier resin phase completely intermixed with and surrounded by the letdown resin phase. Subparagraph (j) on page 6 of the April 2008 Final Office Action states:

> It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have made the co-extruded film of Heyn et al. in the manner set forth in Norquist et al.

However, Norquist et al fails to overcome this deficiency of Heyn et al and Haffner et al. As is evident from the Norquist et al column 5, lines 49 – 55, column 6, lines 3 – 9 and Fig. 4, the Norquist et al co-extruded web 12 has so-called discrete embedded phases 59 that extend continuously down the entire length of the co-extruded upper layer 61 and lower layer 63. Even if Norquist et al upper layer 61 was the letdown resin and lower layer 63 was the letdown resin and the embedded phases 59 were the carrier resin with the filler, the resulting web 12 shown in Norquist et al Fig. 4 would fail to satisfy the requirements of claim 1. For the embedded phases 59 are co-extensive with the upper and lower layers 61, 63, and thus the ends of the embedded phases 59 are never enclosed by the upper and lower layers 61, 63. The Norquist et al embedded phases 59 are never surrounded by the upper and lower layers 61, 63, and accordingly, each of these discrete regions of the carrier resin phase 59 is not completely intermixed with and surrounded by the letdown resin phase 61, 63.

Norquist et al simply fails to suggest enclosing the ends of the embedded phases 59 by joining the upper and lower layers 61, 63 in a way that surrounds the so-called embedded phases 59. In reality, Norquist et al's so-called embedded phases 59 are never fully embedded. Thus, making "the co-extruded film of Heyn et al. in the manner set forth in Norquist et al" as the April 2008 Final Office Action suggests is obvious, does not supply the element of Appellant's claim 1 that the April 2008 Final Office Action admits is missing.

Moreover, in Appellant's claim 1, substantially all of the filler 17 (FIG. 1) must be separated from contact with the letdown phase 15. As explained previously, a substantial portion of the filler 17 contacts the letdown phase 15 in a film extruded according to Heyn et al, and thus ***substantially all of the filler is not separated from contact with the letdown phase*** in a film extruded according to Heyn et al. Nor can Norquist et al overcome this deficiency. For appellant's claim 1 would require that substantially all of the alleged Norquist et al filler 59 must be separated from contact with the alleged Norquist et al letdown phase 63, and that separation aspect clearly is not demonstrated by Norquist et al Fig. 4 or any other disclosure of Norquist et al.

In response to Appellant's above remarks, paragraph 6 on page 7 of the April 2008 Final Office Action states that lines 40-59 of column 13 of Norquist et al:

> disclose that the embedded phase is in fact a plurality of discrete embedded phases spaced apart from one another and are surrounded by a continuous matrix as instantly claimed. This description of an embodiment of Norquist et al provides for the claimed structure. The filler is to be provided only in the embedded phase and as such provides for the filler being separated from contact with the letdown phase.

However, Appellant contends that the only conclusion to be drawn from a careful reading of Norquist et al lines 40-59 of column 13 is that the claimed separation aspect is not disclosed by Norquist et al. For lines 40-59 of column 13 of Norquist et al state (emphasis added):

> In yet another application of the invention, the method and apparatus are used to create a web having **excellent tear resistance in the cross-web direction**. As depicted in FIG. 7A, the web 82 has a plurality of discrete embedded phases 84 spaced apart from each other in the cross-web direction. **Discrete phases 84 are preferably resistant to tearing (i.e., they reinforce the web)**. The discrete phases 84 are surrounded by a continuous matrix 86. Discrete phases 84 are for example, ultra-low density polyethylene. Matrix 86 is, for example, polypropylene. The continuous nature of the matrix allows the incorporation of phases made of a material that has little affinity for the matrix material. The phases are not able to delaminate from the matrix because they are encapsulated within the matrix. As such, these encapsulated phases avoid problems associated with materials that are extruded onto or laminated to the matrix. For example, nylon phases may be incorporated into a polypropylene matrix, even though nylon would not readily be extruded onto or laminated to a polypropylene substrate without delamination.

Fig. 7A of Norquist et al is a view that would be seen if one took a cross section of a structure similar to what is shown in Fig. 4 of Norquist et al except that the Fig. 7A web 82 only has two constituents (84, 86) rather than the three constituents (61, 63, 59) of the web 12 of Fig. 4. Because the discrete phases 84 are intended to resist tearing of the web 82 in the transverse direction, which is left to right across the page of Fig. 7A, the discrete embedded phases 84 must be continuous strands that run down the entire length of the web 82. For if the phases 84 were to terminate at any point in the longitudinal direction, then there would not be any discrete phase to resist transverse

tearing at that location, and resistance to transverse tearing is the intended purpose of the discrete phase 84. Accordingly, it cannot be the case that this disclosure of Norquist et al discrete phase 84 is ever surrounded by the matrix 86, which only is encapsulating in the transverse direction but not the longitudinal direction. Accordingly, Norquist et al fails to disclose that the embedded phase is in fact a plurality of discrete embedded phases that are surrounded by the continuous matrix as claimed.

Additionally, Appellant's claims include three constituents (FIG. 1): letdown resin 15, carrier resin 13 and filler 17, with the filler 17 kept isolated from contact with the letdown resin 15. Per lines 40-59 of column 13 of Norquist et al, Norquist et al only involves two constituents, an ultra-low density polyethylene 84 embedded within a polypropylene matrix 86. Norquist et al does not suggest including a filler within the ultra-low density polyethylene 84, nor does Norquist et al suggest isolating any such filler from contact with the polypropylene matrix 86.

For the reasons explained above, Appellant respectfully asserts that the combination of Heyn et al and Haffner et al and Norquist et al does not render Appellant's claims 1-27 unpatentable under 35 U.S.C. 103(a). Accordingly, Appellant respectfully submits that claims 1-5 and 7-27 are patentable under 35 U.S.C. 103(a) over Heyn et al in view of Haffner et al and Norquist et al.

B. Claim 23 is patentable under 35 U.S.C. 103(a) over Heyn et al in view of Haffner et al and Norquist et al.

Claim 23 requires the breathable laminate to have a moisture vapor transmission rate of about 5,000 g/m^2/24 hours to about 10,000 g/m^2/24 hours. In subparagraph (d) on page 4, the April 2008 Final Office Action states:

> Haffner et al. teach a WVTR in excess of 1500 g/m^2/day. This provides for the breathability of instant claim 23.

Subparagraph (e) on page 5 of the April 2008 Final Office Action states:

> It is noted herein that the teachings of Haffner et al. include WVTR in excess of 1500 g/m^2/day. It is the Examiner's interpretation that such a teaching encompasses the ranges of 5,000 and 10,000 g/m^2/day as claimed herein.

However, Appellant would point out that even the lower end of the claimed range is a factor of ***3 times greater*** than the disclosed WVTR level of Haffner et al. Moreover, it is more plausible to state that the teaching of Haffner et al suggests 1600 g/m^2/day, which is not within the range of claim 23. Appellant therefore respectfully submits that the Examiner's interpretation is unreasonable and hence clearly erroneous.

Accordingly, for this additional reason it is respectfully submitted that claim 23 is patentable under 35 U.S.C. 103(a) over Heyn et al in view of Haffner et al and Norquist et al.

C. Claim 6 is patentable under 35 U.S.C. 103(a) over Heyn et al in view of Haffner et al and Norquist et al as applied to claim 1 and further in view of Bansal.

Bansal fails to correct the deficiencies noted above in Heyn et al in view of Haffner et al and Norquist et al as applied to claim 1, and thus for this reason alone, claim 6 is patentable under 35 U.S.C. 103(a) over Heyn et al in view of Haffner et al and Norquist et al as applied to claim 1, and further in view of Bansal.

Moreover, claim 6 requires the carrier resin ethylene polymer or copolymer to have a melt index of at least about 20 grams per 10 minutes. The April 2008 Final Office Action states at subparagraph (a) of paragraph 3 on page 6 that Bansal is cited for its disclosure of:

> a multiple component spunbonded web and laminates thereof comprising a LLDPE core component (abstract) that has a density between 0.91 and 0.95 g/cc and a melt index between 18g/10min to 22 g/10 min [0013].

However, Bansal paragraph 0022 defines a multiple component web as a nonwoven web comprising multiple component fibers. Thus, the Bansal web is not composed of a LLDPE core component. Rather, the Bansal web comprises a spunbond fiber formed of multiple component fibers. Specifically, the Bansal web comprises a spunbond fiber formed in a sheath-core configuration with the polyester component in the core and the linear low density polyethylene component in the sheath. Indeed, the Bansal abstract states (emphasis added):

> A multiple component spunbond nonwoven web is provided which **is formed from continuous multiple component fibers** which include a polyester component and a polyethylene component. * * * The spunbond fibers are preferably formed in a sheath-core configuration with the **polyester component in the core** and the **linear low density polyethylene component in the sheath**.

The April 2008 Final Office Action states at subparagraph (c) on page 7 thereof that:

> It would have been obvious at the time the invention was made to a person having ordinary skill in the art to have made the co-extruded film of Heyn et al. having the carrier resin being a polyethylene with a melt index of at least 20 g/10 min. The skill artisan would have been motivated by the desire to create a product with superior grab tensile strength and minimized surface fuzzing [0026].

However, while Heyn et al is a co-extruded film, Bansal is neither a co-extruded film nor a co-extruded web. The only co-extruding done by Bansal is the co-extrusion of the fibers that form the web. Bansal does not co-extrude a film or a web.

Lines 2-3 of paragraph 8 on page 8 of the April 2008 Final Office Action state:

> Paragraph 0026 of Bansal provides clear motivation to use LLDPE of higher melt index, which is the teaching Examiner has relied upon.

However, paragraph 0026 of Bansal appears to teach exactly the opposite, namely, it is disadvantageous to use LLDPE of higher melt index. For the entire Bansal paragraph 0026 states:

> It has been found that formation of a multiple component spun bond web wherein the multiple component spun bond fibers comprise a polyester component and a polyethylene component consisting essentially of a linear low density polyethylene having a melt index greater than 22 g/10 min can be complicated by the generation of high levels of volatile materials during extrusion of the polymers from the spinneret, causing deposits to build up on the spinneret face, quench duct face, and inside the draw jet. High levels of deposit formation reduce productivity by requiring frequent shut-down of the spunbond process to permit removal of the deposits from the equipment. It has also been found that thermally bonded spunbond webs wherein the spunbond fibers comprise a polyester component and a polyethylene component consisting essentially of a linear low density polyethylene having a melt index less than 18 g/10 min generally have reduced grab tensile strength and a high rate of surface fuzzing compared to similar spun bond materials prepared using a higher melt index linear low density polyethylene.

Thus, paragraph 0026 of Bansal teaches that a melt index less than 18 g/10 min has reduced grab tensile strength and a high rate of fuzzing, but using a melt index greater than 22 g/10 min creates undesirable complications in the extrusion machinery, and such complications reduce productivity. Since 22 g/10 min is at least about 20 g/10 min, it is doubtful that the person of ordinary skill would be motivated to employ a melt index of at least about 20 g/10 min in a **co-extruded film** when to do so during

production of mere **multicomponent fibers** risks such disadvantages noted in Bansal paragraph 0026.

In view of the non-analogous features of Bansal and Bansal's contra-indicated disadvantages of using LLDPE of higher melt index noted above, the conclusion of obviousness can be reached only by selecting a single feature, the melt index range, out of a dissimilar web disclosed in Bansal. Appellant respectfully submits that the particular selection of that feature would appear to be guided solely by Appellant's specification.

Appellant therefore respectfully submits that claim 6 is patentable under 35 U.S.C. 103(a) over Heyn et al in view of Haffner et al and Norquist et al as applied to claim 1, and further in view of Bansal.

Conclusion

The rejections of claims 1 – 27 should be reversed, and these claims should be allowed and passed to issue.

8. CLAIMS APPENDIX:

1. (Previously presented) A breathable laminate having a moisture vapor transmission rate of at least about 300 g/m^2/24 hours comprising a nonwoven support layer bonded to an oriented film comprising a letdown resin phase wherein said letdown resin comprises a first ethylene copolymer having a density between 0.900 and 0.915 g/cc and a melt index of no greater than 6 g/ 10 minutes and a carrier resin phase comprising a filler and a different ethylene polymer or copolymer having a density at least about 0.003 g/cc greater than the density of said letdown resin, wherein

substantially all of said filler in said oriented film is contained only within discrete regions of said carrier resin phase and thereby separated from contact with said letdown phase, and wherein each of the discrete regions of the carrier resin phase is completely intermixed with and surrounded by the letdown resin phase.

2. (Original) The breathable laminate of claim 1 wherein the density of the film letdown resin is less than about 0.913 g/cc.

3. (Original) The breathable laminate of claim 2 wherein the density of the film letdown resin is in the range of from about 0.900 g/cc to about 0.912 g/cc.

4. (Original) The breathable laminate of claim 3 wherein the carrier resin ethylene polymer or copolymer has a density at least about 0.007 g/cc higher than that of said letdown resin.

5. (Original) The breathable laminate of claim 1 wherein the carrier resin ethylene polymer or copolymer has a melt index of at least about 10 g/10 min.

6. (Previously presented) The breathable laminate of claim 1 wherein the carrier resin ethylene polymer or copolymer has a melt index of at least about 20 g/10 min.

7. (Original) The breathable laminate of claim 1 having a film basis weight in the range of from about 13 gsm to about 25 gsm.

8. (Original) The breathable laminate of claim 4 having a film basis weight in the range of from about 13 gsm to about 25 gsm.

9. (Original) The breathable laminate of claim 1 wherein the film has a calcium carbonate filler concentration based on the total film composition in the range of from about 30% to about 70% by weight.

10. (Original) The breathable laminate of claim 8 wherein the film has a calcium carbonate filler concentration based on the total film composition in the range of from about 30% to about 70% by weight.

11. (Previously presented) The breathable laminate of claim 1 wherein both film ethylene copolymers are selected from the group consisting of linear low density polyethylene.

12. (Previously presented) The breathable laminate of claim 10 wherein both film ethylene copolymers are selected from the group consisting of linear low density polyethylene.

13. (Original) The breathable laminate of claim 1 wherein said nonwoven comprises a spunbond nonwoven.

14. (Original) The breathable laminate of claim 12 wherein said nonwoven comprises a spunbond nonwoven.

15. (Original) The breathable laminate of claim 1 wherein said nonwoven comprises a bonded carded web.

16. (Original) The breathable laminate of claim 12 wherein said nonwoven comprises a bonded carded web.

17. (Original) The breathable laminate of claim 1 wherein said nonwoven comprises more than one layer.

18. (Original) The breathable laminate of claim 14 wherein said nonwoven comprises more than one layer.

19. (Original) The breathable laminate of claim 1 wherein said film comprises more than one layer.

20. (Original) The breathable laminate of claim 14 wherein said film comprises more than one layer.

21. (Original) The breathable laminate of claim 1 wherein said film has a break strain in the cross machine direction of greater than 300%.

22. (Original) The breathable laminate of claim 14 wherein said film has a break strain in the cross machine direction of greater than 300%.

23. (Previously presented) The breathable laminate of claim 1 having a moisture vapor transmission rate of about 5000 $g/m^2/24$ hours to about 10,000 $g/m^2/24$ hours.

24. (Original) The breathable laminate of claim 1 wherein said film higher density ethylene copolymer has a density greater than 0.915 g/cc.

25. (Original) The breathable laminate of claim 14 wherein said letdown resin phase and said carrier resin phase comprise a layer constituting at least about 90% of the total film thickness.

26. (Original) A personal care product comprising the breathable film laminate of claim 1.

27. (Original) A disposable diaper comprising the breathable film laminate of claim 1 as a backing component.

28. (Withdrawn) A process for forming a breathable laminate of a film and a nonwoven comprising the steps of:

selecting a letdown ethylene copolymer resin having a density less than 0.915 g/cc and a melt index less than about 6;

dispersing a filler in a carrier ethylene polymer or copolymer resin having a density at least about 0.003 g/cc higher than said letdown resin;

dry blending said letdown resin and said filled carrier resin in amounts to provide a filler concentration in the blend of about 30% to 70% by weight;

extruding said blend to form a film;

stretching said film; and

bonding said film to a nonwoven layer.

29. (Withdrawn) The process of claim 28 wherein the step of stretching said film takes place after said film and nonwoven layer are bonded.

30. (Withdrawn) The process of claim 28 wherein said bonding step comprises an adhesive bonding step.

9. Evidence Appendix:

N/A

10. Related Proceedings Appendix:

N/A

Respectfully submitted,

DORITY & MANNING, P.A.

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